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56	Montgomery, D. R., K. M. Schmidt, H. M. Greenberg and W. E. Dietrich. 2000. Forest clearing and regional landsliding. Geology 28: 311-314.	X	Landslides	12
57	Turner, T.R., S.D. Duke, B.R. Fransen, M.L. Reiter, A.J. Kroll, J.W. Ward, J.L. Bach, T. E. Justice and R.E. Bilby. 2010. Landslide densities associated with rainfall, stand age, and topography on forested landscapes, southwestern Washington, USA. *Forest Ecology and Management* 259 (2010) 2233–2247.	X	Landslides	12
58	Schmidt, K.M., J.J. Roering, J.D. Stock, W.E. Dietrich, D.R. Montgomery, and T. Schaub. 2001. The variability of root cohesion as an influence on shallow landslide susceptibility in the Oregon Coast Range, Canada Geotech. J. Vol. 38; 997-1024	X	Landslides	12
59	Sakals, M.E. and R.C. Sidle. 2004. A spatial and temporal model of root cohesion in forest soils. *Canadian Journal of Forest Research* 34(4): 950-958.	X	Landslides	12

	C	D	E	F
60	Whittaker, K.A. and D. McShane. 2012. Comparison of slope instability screening tools following a large storm event and application to forest management and policy. *Geomorphology* 145-146 (2012); 115-122.	X	Landslides	13
61	Stewart, G., J. Dieu, J. Phillips, M. O'Connor, C. Veldhuisen. 2013. The Mass Wasting Effectiveness Monitoring Project: An examination of the landslide response to the December 2007 storm in Southwestern Washington; Cooperative Monitoring, Evaluation and Research Report (CMER) 08-802. Washington Department of Natural Resources, Olympia, WA.	X	Landslides	13
62	Whittaker, K.A. and D. McShane. 2012. Comparison of slope instability screening tools following a large storm event and application to forest management and policy. *Geomorphology* 145-146 (2012); 115-122.	X	Landslides	13
63	Cederholm, C.J., L.M. Redi, E.O. Salo. 1980. Cumulative Effects of Logging Road Sediment on Salmonid Populations in the Clearwater River,Jefferson County, Washington. Controbution No. 543, College of Fisheries, University of Washington, Seattle, Washington 98195.	X	Landslides	13
64	Jensen, D.W., E.A. Steel, A.H. Fullerton, G.R. Pess. 2009. Impact of Fine Sediment on Egg-To-Fry Survival of Pacific Salmon: A Meta-Analysis of Published Studies. *Reviews in Fisheries Science* : 17(3):348-359, Northwest Fisheries Science Center, NOAA Fisheries, Seattle Washington, USA.	X	Landslides	13
65	EPA. 2003. Developing Water Quality Criteria for Suspended and Bedded Sediments (SABS): Potential Approaches (Draft). U.S. Environmental Protection Agency, August 2003.	X	Landslides	13
66	Bauer, S.B. and S.C. Ralph. 1999. Aquatic Habitat Indicators and their Application to Water Quality Objectives within the Clean Water Act. Section 3. U.S. Environmental Protection Agency, Region 10, July 1999. p. 20. EPA 910-R-99-014.	X	Landslides	13

	C	D	E	F
67	Oregon Department of Environmental Quality. No Date. Water Quality: Water Quality Standards: Turbidity. http://www.deq.state.or.us/wq/standards/turbidity.htm	X	Landslides	13
68	Burns, W. J., S. Duplantis, C. Jones, J. English. 2012. LIDAR Data and Landslide Inventory Maps of the North Fork Siuslaw River and Big Elk Creek Watersheds, Lane, Lincoln and Benton Counties, Oregon. Open-File Report O-12-07, Oregon Department of Geology and Mineral Industries. Available online at: http://www.oregongeology.org/pubs/ofr/p-O-12-07.htm	Abstract Only	Landslides	14
69	State of Oregon (ODA, ODEQ, ODF, and OHA). 2011. Pesticide Management Plan for Water Quality Protection. May 2011.	X	Pesticides	15
70	NMFS. 2011. National Marine Fisheries Service Endangered Species Act Section 7 Consultation Biological Opinion Environmental Protection Agency Registration of Pesticides 2,4-D, Triclopyr BEE, Diuron, Linuron, Captan, and Chlorothalonil. NOAA National Marine Fisheries Service, June 30, 2011.	X	Pesticides	15
71	EPA. 1993. Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. Chapter 3. Management Measures for Forestry. EPA 840-B-92-002. Environmental Protection Agency, January 1993.	X	Pesticides	16
72	Norris, L.A. and D.G. Moore. 1971. The Entry and Fate of Forest Chemicals in Streams. In Forest Land and Stream Environment – Symposium Proceedings, ed. J.T. Krygier and J.D. Hall. Oregon State University, Corvallis, Or, pp. 138-158.	X	Pesticides	16
73	Riekirk. H. 1989. Forest Fertilizer and Runoff-Water Quality. *Soil and Crop Science* Society of Florida Proceedings, 48:99-102 (1989). September 20-22, 1988, Marco Island, FL.	X	Pesticides	16
74		In Book - Not received	Pesticides	16
75	Dent L. and J. Robben. 2000. Oregon Department of Forestry: Aerial Pesticide Application Monitoring Final Report. Oregon Department of Forestry, Forest Practices Monitoring Program. Technical Report 7. March 2000.	X	Pesticides	16

	C	D	E	F
76	Dent L. and J. Robben. 2000. Oregon Department of Forestry: Aerial Pesticide Application Monitoring Final Report. Oregon Department of Forestry, Forest Practices Monitoring Program. Technical Report 7. March 2000.	X	Pesticides	16
77	Kelly, V.J., C.W. Anderson, and K. Morgenstern. 2012. Reconnaissance of land-use sources of pesticides in drinking water, McKenzie River, Oregon: USGS Scientific Investigations Report 2012-5091.	X	Pesticides	17
78	Oregon Health Authority. 2013. Public Comment Release. Public Health Assessment Highway 36 Corridor Exposure Investigation. Prepared by the Environmental Health Assessment Program, Oregon Health Authority, Under Cooperative Agreement with the Agency for Toxic Substances and Disease Registry. May 9, 2013.	X	Pesticides	17
79	Louch, J. 2013. Measurement of Glyphosate, Imazapyr, Sulfometuron methyl, and Metsulfuron methyl in Needle Branch Streamwater. National Council for Air and Stream Improvement. Special Report No. 130-1. July 2013.	X	Pesticides	17
80	Peterson, E. EPA. 2011. Memo to Scott Downey, EPA and David Powers, EPA RE: Comparative Characterization of Pacific Northwest Forestry Requirements for Aerial Application of Pesticides. August 30, 2011.	X	Pesticides	18

	G	H
1	**Comment**	**Accurate/ Inconsistent**
2	These voluntary measures include large wood placement, retaining additional basal area within stream buffers, large tree retention, and treating large and medium sized non-fish streams the same as fish streams for buffer retentions.	Accurate
3	A significant body of science...indicates that riparian protection around small and medium fish bearing streams and non-fish bearing streams in Oregon is not sufficient to protect water quality and beneficial uses.	Inconsistent
4	A significant body of science...indicates that riparian protection around small and medium fish bearing streams and non-fish bearing streams in Oregon is not sufficient to protect water quality and beneficial uses.	Accurate
5	A significant body of science...indicates that riparian protection around small and medium fish bearing streams and non-fish bearing streams in Oregon is not sufficient to protect water quality and beneficial uses.	Accurate
6	A significant body of science...indicates that riparian protection around small and medium fish bearing streams and non-fish bearing streams in Oregon is not sufficient to protect water quality and beneficial uses.	Accurate
7	A significant body of science...indicates that riparian protection around small and medium fish bearing streams and non-fish bearing streams in Oregon is not sufficient to protect water quality and beneficial uses.	Accurate
8	Based on its scientific analysis, the IMST team concluded, "…the current site-specific approach of regulation and voluntary action is not sufficient to accomplish the recovery of wild salmonids.	Accurate
9	The IMST team made the following recommendations: 1) because non-game fish and other aquatic organisms play a role in a functioning stream system, and the distribution of salmonids will change over time, non-fish bearing streams should be treated no differently from fish-bearing streams when determining the buffer width protections.	Accurate

	G	H
10	there should be an increase in the number of trees within the riparian management area for both fish and non-fish bearing small and medium streams.	Accurate
11	The 2002 Sufficiency Analysis found that the Oregon FPA's prescribed riparian buffer widths for small and medium fish bearing streams may be inadequate to prevent temperature impacts. That analysis concluded: 1) FPA Standards for some medium and small Type F streams in western Oregon may result in shortterm temperature increases at the site level; and 2) FPA standards for some small Type N streams may result in short-term temperature increases at the site level that may be transferred downstream (this may impact water temperature and cold-water refugia) to fish-bearing streams.	Accurate
12	The 2011 RipStream reports found that FPA riparian protections on private forest lands did not ensure achievement of the Protection of Cold Water criterion (PCW) under the Oregon water quality standard for temperature.	Accurate
13	The 2011 RipStream reports found that FPA riparian protections on private forest lands did not ensure achievement of the Protection of Cold Water criterion (PCW) under the Oregon water quality standard for temperature.	Accurate
14	The RipStream analysis found that the chance of a site managed using FPA rules exceeding the PCW criterion between a pre-harvest year and a post-harvest year was 40%.	Accurate
15	The RipStream analysis found that the chance of a site managed using FPA rules exceeding the PCW criterion between a pre-harvest year and a post-harvest year was 40%.	Accurate
16	The RipStream study also found that stream temperature fluctuations increased, in part, with a reduction in shade, and that shade was best predicted by riparian basal area and tree height. The findings suggest that riparian protection measures that maintain higher shade (such measures found on state forest land) are more likely to maintain stream temperatures similar to control conditions.	Accurate
17	In 2013, the EPA, together with the USGS and the BLM, sought to summarize pertinent scientific theory and empirical studies to address the effects of riparian management strategies on stream function, with a focus on temperature.	Accurate
18	With regard to no-cut buffers adjacent to clearcut harvest units, that paper noted that substantial effects on shade have been observed with "no-cut" buffers ranging from 20 to 30 meters…	Accurate

	G	H
19	With regard to no-cut buffers adjacent to clearcut harvest units, that paper noted that substantial effects on shade have been observed with “no-cut” buffers ranging from 20 to 30 meters…	Accurate
20	With regard to no-cut buffers adjacent to clearcut harvest units, that paper noted that substantial effects on shade have been observed with “no-cut” buffers ranging from 20 to 30 meters…	Accurate
21	, and small effects have been observed in studies that examined “no-cut” buffer widths of 46 meters wide.	Accurate
22	, and small effects have been observed in studies that examined “no-cut” buffer widths of 46 meters wide.	Accurate
23	For “no-cut” buffer widths of 46-69 meters, the effects of tree removal on shade and temperature were either not detected or were minimal.	Accurate
24	For “no-cut” buffer widths of 46-69 meters, the effects of tree removal on shade and temperature were either not detected or were minimal.	Accurate
25	For “no-cut” buffer widths of 46-69 meters, the effects of tree removal on shade and temperature were either not detected or were minimal.	Accurate
26	For “no-cut” buffer widths of 46-69 meters, the effects of tree removal on shade and temperature were either not detected or were minimal.	Accurate
27	The most dramatic effects were observed at the narrowest buffer widths (less than or equal to 10 meters).	Accurate
28	The most dramatic effects were observed at the narrowest buffer widths (less than or equal to 10 meters).	Accurate
29	The most dramatic effects were observed at the narrowest buffer widths (less than or equal to 10 meters).	Accurate

	G	H
30	The most dramatic effects were observed at the narrowest buffer widths (less than or equal to 10 meters).	Accurate
31	The most dramatic effects were observed at the narrowest buffer widths (less than or equal to 10 meters).	Accurate
32	Oregon also has been investing in three paired watershed studies.	Accurate
33	Unpublished preliminary data from the Hinkle Creek study indicate that changes in stream temperature after timber harvesting along non-fish bearing streams were variable. In addition, there was no measureable downstream effect on temperatures.	Accurate
34	However, the variation in stream temperature and overall net observed temperature decrease may be attributable to increased slash debris along the stream after harvest, as well as a likely increase in stream flow post-harvest that could prevent an increase in temperatures and contribute to lower mean stream temperatures.	Accurate
35	In its evaluation of the study results, DEQ concluded that temperature data from the Hinkle Creek and Alsea River studies show that for fish-bearing streams, temperature increases downstream from the harvest sites were very similar to the increases found in the RipStream study.	Accurate
36	As previously discussed in the IMST study, non-fish bearing streams should be treated no differently from fish-bearing streams when determining buffer-width protection.	Accurate
37	old roads make up the majority of forest roads, and road inventory data on private land is not widely available.	Accurate
38	These roads would often parallel low gradient streams (historically the most productive coho habitat) and cross many tributaries.	Accurate

	G	H
39	Prior to modern best management practices, mid-slope roads would often be connected to these valley bottom roads to access harvest units.	Accurate
40	It is widely recognized that these poorly designed forest roads increase sediment supplied to streams by altering hillslope hydrology, surface runoff, and sediment flux.	Accurate
41	It is widely recognized that these poorly designed forest roads increase sediment supplied to streams by altering hillslope hydrology, surface runoff, and sediment flux.	Accurate
42	It is widely recognized that these poorly designed forest roads increase sediment supplied to streams by altering hillslope hydrology, surface runoff, and sediment flux.	Accurate
43	It is widely recognized that these poorly designed forest roads increase sediment supplied to streams by altering hillslope hydrology, surface runoff, and sediment flux.	Accurate
44	It is widely recognized that these poorly designed forest roads increase sediment supplied to streams by altering hillslope hydrology, surface runoff, and sediment flux.	Accurate
45	These roads can also become a chronic source of low level sediment over time.	Accurate
46	The ecological consequences of sediment chronically supplied from roads may be equally or even more detrimental over time than periodic sediment pulses.	Partially Accurate
47	Furthermore, legacy roads can serve as initiation points for landslides many years (or even decades) after construction.	Accurate
48	For example, one study found that forestry roads in Oregon built before 1984, have higher landslide rates than those built later.	Accurate
49	For example, one study found that forestry roads in Oregon built before 1984, have higher landslide rates than those built later.	Unknown- Article Could not be Retrieved

	G	H
50	"'Old roads and railroad grades' on forestlands, sometimes called legacy roads, are not covered by the OFPA rules unless they are reactivated for a current forestry operation or purposes. IMST believes the lack of a mechanism to address the risks presented by such roads is a serious impediment to achieving the goals of the Oregon Plan. A process that will result in the stabilization of such roads is needed, with highest priority attention to roads in core areas, but with attention to such roads and railroad grades at all locations on forestlands over time."	Accurate
51	NMFS indicated that the forest practice rules have no well-defined process to identify problems with older logging roads and railroad grades constructed prior to 1994.	Accurate
52	For example, logging roads are a source of fine sediments which enter spawning gravel and can lower the success of spawning and recruitment for coho salmon.	Accurate
53	NMFS explained that "existing and legacy [forestry] roads can contribute to continued stream degradation over time through restriction of debris flows, sedimentation, restriction of fish passage, and loss of riparian function."	Accurate
54	roads built prior to the 1983 rule changes	Accurate
55	For example, Robinson et al. found that in three out of four areas studied in very steep terrain, landslide densities and erosion volumes were greater in stands that were clear-cut during the previous nine years.	Accurate
56	The regional analysis from the Mettman Ridge study found that forest clearing dramatically accelerates shallow landsliding in steep terrain typical of the Pacific Northwest.	Accurate
57	In southwestern Washington, rain fall intensity, slope steepness, and stand age affected landslide rates.	Accurate
58	The higher the root cohesion, the better the root system can stabilize the soil, reducing the risk of landslides.	Accurate
59	Sakals and Sidle modeled the effect of different harvest methodologies on root cohesion over time.	Accurate

	G	H
60	"In the Pacific Northwest, … [l]andslides alter aquatic habitats by elevating sediment delivery, creating log jams, and causing debris flows that scour streams and stream valleys down to bedrock (Rood, 1984; Cederholm and Reid, 1987; Hogan et. al., 1998). The short-term and long-term impacts of higher rates of landslides on fish include habitat loss, reduced access to spawning and rearing sites, loss of food resources, and direct mortality (Cederholm and Lestelle, 1974; Cederholm and Salo, 1979; Reeves et. al., 1995). The restoration of geomorphic processes to natural disturbance regimes is crucial to the recovery of endangered salmonids (Oncorhynchus spp.) and other aquatic species in the Pacific Northwest as these species evolved under conditions with much lower sediment delivery and landslide frequency (Reeves et. al., 1995; Montogomery, 2004)."	Accurate
61	In 2013, the Cooperative Monitoring Evaluation and Research committee (CMER) of the Washington State Department of Natural Resources published a study that explored landslide response to a large 2007 storm in Southwestern Washington.	Accurate
62	It is well documented that sediment can clog and damage fish gills, suffocate fish eggs, smother aquatic insect larvae, and fill in spaces in streambed gravel where fish lay eggs. Sediment can also carry other pollutants into waterbodies, creating issues for domestic water supply and public water providers.	Accurate
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	G	H
67	It is well documented that sediment can clog and damage fish gills, suffocate fish eggs, smother aquatic insect larvae, and fill in spaces in streambed gravel where fish lay eggs. Sediment can also carry other pollutants into waterbodies, creating issues for domestic water supply and public water providers.	Accurate
68	To support the development of the TMDL, the Oregon Department of Geology and Mineral Resources completed landslide inventory maps for two watersheds in the Mid-Coast Basin finding hundreds of previously unidentified landslides.	Accurate
69	In addition to the FPA rule buffers noted above, the state also addresses pesticide issues through the Chemical and Other Petroleum Product Rules (OAR 629-620-0000 through 800), Pesticide Control Law (ORS 634), best management practices set by the ODA, and federal pesticide label requirements under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as well as the state's Water Quality Pesticide Management Plan.	Accurate
70	In the NOAA National Marine Fisheries Services' (NMFS) biological opinion (BiOp) for several EPA herbicide labels, including 2,4-D, aerial drift was identified as the most likely pathway for these herbicides to enter aquatic habitats.	Accurate - Though perhaps overstated
71	Research has shown that the aerial application of herbicides may adversely impact water quality and salmon. As discussed in EPA's Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters	Accurate
72	Norris and Moore (1971) , observed the concentration of 2,4-D in streams was one to two orders of magnitude higher in forestry operations without buffers than in areas with buffers.	Unable to verify or dispute
73	Riekirk and others (1989) found that the greatest risk to water quality from forestry pesticide application was from aerial application and drift, runoff, and erosion.	Inconsistent
74	found that the greatest risk to water quality from forestry pesticide application was from aerial application and drift, runoff, and erosion. Norris et. al. (1991).	Unknown- Article Could not be Retrieved
75	Studies in Oregon have found positive detections of hexazinone and 2,4-D ester in water after aerial application.	Accurate

	G	H
76	These levels have been below thresholds of concern determined in the studies for people and aquatic life. ODF's Dent and Robben 2000 Study monitored herbicides and fungicides along Type F (fish-bearing) and Type D (drinking water) streams to assess the effectiveness of the FPA pesticide management practices at protecting water quality during drift application.	Accurate
77	In a 2012 USGS study in the McKenzie River of the Clackamas Basin outside the coastal zone management area, 43 out of 175 compounds were detected at least once across 28 sites.	Accurate
78	Low levels of herbicides applied during aerial applications were found in 10 soil samples, but no herbicides were found in drinking water samples.	Inconsistent
79	OODF's paired watershed study on the Alsea subbasin also found that while some herbicides were detected, they were not at levels that would pose a significant risk to humans or aquatic life.	Accurate
80	Oregon and other Pacific Northwest states have recognized the need to go beyond the national FIFRA label requirements to protect water quality and aquatic species, including salmon, in their state.	Inconsistent

	I	J
1	**Explanation (if inconsistent)**	**Potential Edits to Footnote**
2		Add formal reference or page number (14)
3	The study notes the importance of riparian buffer protection to meeting water quality standards for high quality aquatic habitat. This study was designed to look at the temeprature changes prior to and after harvest. It did not seek to identify water quality exceedances.	Schoenholtz is missing a "c"
4	The study did find exceedances of the Protecting Cold Water criterion though it notes that use of the more stringent state forest riparian standards resulted in exceedance rates that were similar to those of preharvest, control, and downstream sites.	
5	The study found that private forest land saw stream temperature increases post harvest, but it found that state forests did not see the increase in temperature. The abstract specifically states "Findings suggest that riparian protection measures that maintain higher shade such as the state forests were more likely to maintain stream temperatures similar to control conditions"	Add J. Fleuret to authors
6		Note page 23
7		Note page 2
8		Change to Ibid. 2.
9		

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12		
13		Add Daugherty to authors
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16		
17		fix author formatting (G. McFadden)
18	Note that while the original reference was obtained only Leinebach was reviewed for accuracy.	

	I	J
19	Note that while the original reference was obtained only Leinebach was reviewed for accuracy.	
20	Note that while the original reference was obtained only Leinebach was reviewed for accuracy.	
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30	Note that while the original reference was obtained only Leinebach was reviewed for accuracy.	
31	Note that while the original reference was obtained only Leinebach was reviewed for accuracy.	
32		
33		Add period after WRC to citation
34		
35		Correct citation of authors
36		
37		Correct citation of authors
38		Correct citation of authors

	I	J
39		Correct citation of authors. Add page 192
40		Correct citation of authors
41		Correct citation of authors
42		Correct citation of authors
43		
44	Linked to road caused landslides in this study.	Make consistent with footnote 41, correct citation of authors
45		
46	This study notes that aquatic species are affected by chronic pollution, the study is not specific to forestry roads. Suggest also citing MacDonald for this statement as that study specifically calls out the possibility of chronic sediment being detrimental to aquatic species.	Make sure all journal citations are consistent, either abbreviations or full names for all
47		Add page 33 to the footnote
48		Change to Ibid. 33?
49	Abstract does not include enough detail to verify statement; see next column regarding suggested edit to footnote if article cannot be obtained.	Change to Sessions, 1987 as cited in ODF and ODEQ 2002. (Or don't include since article can't be retrieved)

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50		
51		
52		Correct citation of authors
53		
54	Add clarification that legacy roads are those built prior to 1972. The way this sentence is worded makes it seem like legacy and old roads are both those built prior to 1983.	
55		Make consistent with footnote 31
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66		Correct citation

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70	pg 378 2,4-D has a relatively low potential for volatilization from soil and water suggesting secondary drift is not a likely pathway of high exposure. Pg.379 These properties suggest that drift and runoff are the most likely pathways of deposition of 2,4-D into aquatic habitats (EPA, 2009a). pg. 384 Primary spray drift is also a likely pathway of exposure to aquatic organisms given broadcast ground and aerial application methods.	
71		Include "page 3-88"
72	Please cite the page this statement is based on. Could not find any reference to buffers and 2,4 D in the report. There was some discussionof 2,4 d concentrations but it did not make reference to one site being buffered while the other wasn't.	
73	This study did not focus on pesticide application, rather it was about fertilization	
74		
75		Add Citation

	I	J
76		Change to Ibid
77		Correct Citation
78	It is possible this is the wrong version of the report. Neither this nor the final 2014 version mentioned 10 soil samples.	
79		
80	While the statement may be true, the reference does not specifically cite this statement. Should move this footnote to later in the paragraph when it talks about specific buffer distances mentioned in the memo.	

	A
1	Czarnomski, N., C.V. Hale, W.T. Frueh, M. Allen, J. Groom. 2013. Effectiveness of Riparian Buffers at Protecting Stream Temperature and Shade in Pacific Northwest Forests: A Systematic Review. Final Report September 2013.